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Japanese (PDF)

File Wrapper Information

FULL CONTENTS CLAIM + DETAILED DESCRIPTION TECHNICAL FIELD  
PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS  
EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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**Notes:**

1. Untranslatable words are replaced with asterisks (\* \*\* \*).
2. Texts in the figures are not translated and shown as it is.

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Dictionary: Last updated 05/30/2008 / Priority: 1. Chemistry / 2. Mechanical engineering / 3. Technical term

## FULL CONTENTS

**[Claim(s)]**

[Claim 1] The asphalt composition for pavement which mixed the straight asphalt of 5 - 90 weight part to the advanced hydrocracking process residue 100 weight part.

[Claim 2] The asphalt composition which mixed solvent EKUSUTORAKUTO of 2 - 20 weight part to the asphalt composition 100 weight part for pavement of Claim 1.

[Claim 3] The asphalt composition which mixed petroleum resin of 3 - 30 weight part to Claim 1 or the asphalt composition 100 weight part of 2.

[Claim 4] The asphalt composition which mixed the rubber of 3 - 30 weight part to Claim 1 - one asphalt composition 100 weight part of three.

[Claim 5] The asphalt composition which mixed the thermoplastic rubber of 3 - 30 weight part to Claim 1 - one asphalt composition 100 weight part of three.

[Claim 6] The asphalt composition which mixed solvent EKUSUTORAKUTO of 2 - 20 weight part to the advanced hydrocracking process residue 100 weight part.

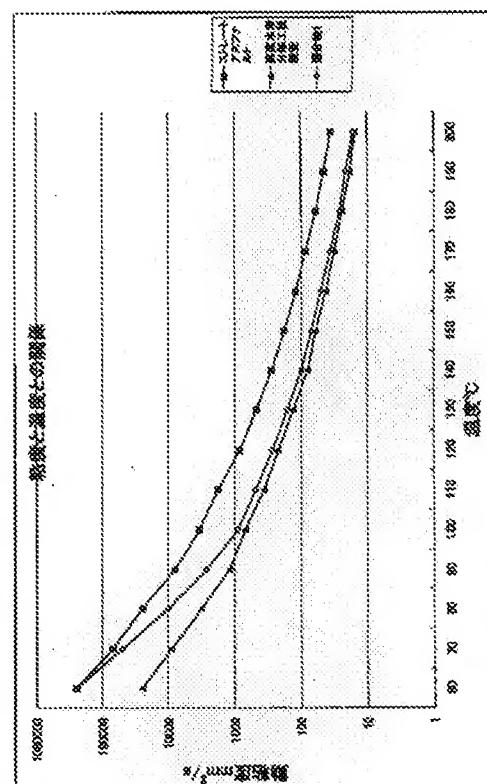
[Claim 7] The asphalt composition which mixed petroleum resin of 3 - 30 weight part to the asphalt composition 100 weight part of Claim 6.

[Claim 8] The asphalt composition which mixed the rubber of 3 - 30 weight part to Claim 6 or the asphalt composition 100 weight part of 7.

[Claim 9] The asphalt composition which mixed the thermoplastic rubber of 3 - 30 weight part to Claim 6 or the asphalt composition 100 weight part of 7.

[Claim 10] The Claims 3, 4, 5 and 7 characterized by being used for wastewater, a low noise, heat island prevention, and permeable route pavement, the asphalt composition indicated to either 8 or 9.

[Claim 11] Plied timber with which the asphalt composition of Claim 1 - either of ten was mixed.

Drawing selection **Representative draw**

[Translation done.]

## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the asphalt composition and plied timber which are used suitably for route pavement etc.

[0002]

[Description of the Prior Art] In the Description of an application for patent 2000-252262, an invention-in-this-application person compares, when advanced hydrocracking process residue is used for a route roadbed, and conventional straight asphalt is used. By making low mixed temperature at the time of plied-timber manufacture etc., there was little content of the matter with which large energy saving can be aimed at, and toxicity etc. poses a problem substantially, and it indicated that Merritt of being able to increase the number of times of recycling further was obtained. The vacuum distillation residue of a crude oil with "advanced hydrocracking process residue" here The temperature of 350 degrees C or more, The residue which carried out hydrotreating under 12.0 or more MPa of pressures, 70 to 90% of atmosphere hydrogen concentration, and a fluid catalyst floor, and removed the light part more than 50 mass % further under the temperature of 300 degrees C or more and the conditions of 13.8 or less kPa of pressures is said.

[0003] Moreover, the temperature of 350 degrees C or more, 12.0 or more MPa of pressures, 70 to 90% of atmosphere hydrogen concentration, and the process that carries out hydrotreating under a fluid catalyst floor are processes which carry out advanced hydrocracking of the vacuum distillation residue of a crude oil. Moreover, the process which removes the light part more than 50 mass % under the temperature of 300 degrees C or more and the conditions of 13.8 or less kPa of pressures is a process which divides the middle distillate by which a part of vacuum distillation residue was generated by decomposing, and residue in said advanced hydrocracking process.

[0004] Furthermore, straight asphalt covers a crude oil over ordinary pressure, vacuum distillation equipment, etc., and means the bitumen matter obtained by removing a light part.

[0005]

[Problem to be solved by the invention] However, in the charge of pavement lumber, when straight asphalt was transposed to an advanced hydrocracking process residue simple substance, while many above-mentioned Merritt was obtained, there was a problem that the rutted road surface of a route was intense. It is because the kinematic viscosity of the advanced hydrocracking process residue in near ordinary temperature is more remarkably [ than the kinematic viscosity of straight asphalt ] low.

[0006] Moreover, the case where route pavement is asked what is called for wastewater nature and water permeability ("water permeability" is only told to below.) has increased from viewpoints, such as city warming prevention and prevention of a local flood damage development, in recent years. In the case of the water-permeable paving, the asphalt used is expected to dissolve parts for as many part for rubber, or resin as possible. Advanced hydrocracking process residue had the solubility intrinsically better than straight asphalt over a part for a part for rubber, or resin as the Description of the application for patent 2000-252262 was also indicated, but there was also a claim whether still higher solubility could be acquired.

[0007] Then, even if advanced hydrocracking process residue is used for this invention as a roadbed for routes, there are few inclinations of a rutted road surface and it aims at offering the soluble high asphalt composition and soluble high plied timber to a part for a part for rubber, or resin further.

[0008]

[Means for solving problem] This invention is explained hereafter.

[0009] In one mode of this invention, said technical problem is solved to an

advanced hydrocracking process residue 100 weight part with the asphalt composition which mixed the straight asphalt of 5 - 90 weight part.

[0010] According to this mode, the hot kinematic viscosity of the asphalt composition which the predetermined range boiled advanced hydrocracking process residue and straight asphalt comparatively, and was mixed is close to the kinematic viscosity of advanced hydrocracking process residue, and if it becomes low temperature conversely, it will become rapidly close to the kinematic viscosity of straight asphalt. Therefore, since the hot kinematic viscosity of this mixture is low, Merritt so that energy saving at the time of using it with an advanced hydrocracking process residue simple substance is enjoyable. Moreover, since the kinematic viscosity of this mixture becomes high to near the kinematic viscosity of straight asphalt in near ordinary temperature, when advanced hydrogenation process residue is used alone, the problem of the rutted road surface which poses a problem can be solved.

[0011] In this mode, you may mix solvent EKUSUTORAKUTO of 2 - 20 weight part to said asphalt composition 100 weight part.

[0012] If it does in this way, the compatibility over rubber and resin of an asphalt composition can be raised.

[0013] Moreover, in this mode, you may mix petroleum resin of 3 - 30 weight part to said asphalt composition 100 weight part. In this mode, it is still better also as mixing the rubber of 3 - 30 weight part to said asphalt composition 100 weight part. In this mode, it is still better also as mixing the thermoplastic rubber of 3 - 30 weight part to said asphalt composition 100 weight part.

[0014] a group manufactured with petroleum resin here from the mixed unsaturation monomer obtained from a part for petroleum processing \*\*\*\*\* -- polymer is said. Moreover, rubber here is a high polymer by nature, synthesis, and refining, and means a thing with elasticity, postcure nature, and elastic recovery nature. Moreover, although it is processible like thermoplastics, the polymer holding a characteristic similar to usual vulcanized rubber is called thermoplastic rubber here.

[0015] If it does in this way, an operation of rubber resin or thermoplastic rubber can raise the voidage of the plied timber, and the asphalt composition which can be used conveniently for a water-permeable paving can be offered. The plied timber here mixes asphalt, an asphalt composition, and aggregate, such as ballast, at a predetermined rate, and means what is used for the object of route pavement (it is below the same.).

[0016] In other modes of this invention, the second asphalt composition which mixed solvent EKUSUTORAKUTO of 2 - 20 weight part is offered to an advanced hydrocracking process residue 100 weight part, and said technical problem is solved.

[0017] Solvent EKUSUTORAKUTO means the component which was rich in the aromatic hydrocarbon extracted from a vacuum distillation residue oil with a solvent in the solvent-extraction process which is one of the processes which refines a mineral oil system lubricating oil here.

[0018] According to this mode, the compatibility over rubber and resin of advanced hydrocracking process residue can be raised further. The class of the rubber which can be used by this, or resin will become abundant, and the degree of freedom of a choice can be raised. Rubber and resin of low cost can be used now further by this, and a cost cut can be aimed at.

[0019] In this mode, you may mix petroleum resin of 3 - 30 weight part to said second asphalt composition 100 weight part. Moreover, it is good also as mixing the rubber of 3 - 30 weight part to said second asphalt composition 100 weight part in this mode. Moreover, it is good also as mixing the thermoplastic rubber of 3 - 30 weight part to said second asphalt composition 100 weight part in this mode.

[0020] If it does in this way, the spreading nature on the surface of aggregate can become good by operation of rubber and resin, exfoliation prevention of aggregate and the jam up ball prevention by wear of aggregate can be aimed at, and the

stability of the plied timber and voidage can be raised. The asphalt composition which can be used conveniently for a water-permeable paving by this can be offered. [0021] In other modes of this invention, said technical problem is solved with the plied timber with which the asphalt composition of many above-mentioned modes was mixed.

[0022] According to this mode, the asphalt composition equipped with many above-mentioned characteristics is applicable to the plied timber for route pavement.

[0023] Such an operation and gain of this invention are made clear from the form of the operation explained below.

[0024]

[Mode for carrying out the invention] This invention is explained based on an embodiment below. The case where advanced hydrocracking process residue and straight asphalt are mixed first is explained, and the case where advanced hydrocracking process residue and solvent EKUSUTORAKUTO are mixed after that is explained.

[0025]

[Working example] [ Table 1 and drawing 1 / the measurement result of the kinematic viscosity in the predetermined temperature range of the asphalt composition ("a mixture 1" is told to below.) which 30 weight parts boiled straight asphalt comparatively, and was mixed ] to an advanced hydrocracking process residue 100 weight part It is made to contrast with an advanced hydrocracking process residue simple substance and a straight asphalt simple substance, and is shown. Drawing 1 shows the measurement result of such kinematic viscosity in the temperature range of 60-200 degrees C, and especially the table 1 is shown, contrasting the three above-mentioned person among these about the measurement result of the kinematic viscosity of the temperature range of 66-100 degrees C. Measurement of kinematic viscosity here is JIS. K2207 It carried out according to the test method provided in 6.14.

[0026]

[Table 1]

		比較例1	比較例2	実施例1 (混合例1)
		配合比 (重量部)		
高度木素分解工程残渣		100	0	100
ストレートアスファルト		0	100	30
		動粘度 $\text{mm}^2/\text{s}$		
温度	100℃	700	3500	900
	90℃	1400	8000	2500
	80℃	3000	20000	10000
	70℃	9000	70000	50000
	66℃	14000	120000	120000

[0027] When two kinds of petroleum products which generally have different kinematic viscosity are mixed, the kinematic viscosity of the mixture tends to be more greatly influenced by the product of hypoviscosity among both. For example, when the product A which has the kinematic viscosity of 20mm [s] 2 at a certain temperature, and the product B with the kinematic viscosity of 40mm [s] 2 are mixed every in equivalent amount and Product C is prepared, the kinematic viscosity of Product C does not become s in 30mm [ /] 2 which is the arithmetic mean value of both kinematic viscosity, but takes the middle value of 30 and 20. Also when hyperviscous straight asphalt is mixed with the advanced hydrocracking process

residue which is hypoviscosity, it becomes the same inclination fundamentally. That is, the kinematic viscosity of a mixture 1 will become near the kinematic viscosity of advanced hydrocracking process residue with low viscosity so that it can read also in [drawing 1](#) and Table 1. Especially as for an elevated-temperature side, this inclination is accepted very clearly in a temperature region of 150 degrees C or more. Therefore, at the blend working temperature of the plied timber, curing temperature, and the reheating temperature in a pavement field, the mixture 1 has the kinematic viscosity near advanced hydrocracking process residue. If it puts in another way, blend working temperature of the plied timber which uses a mixture 1, curing temperature, and reheating temperature in a pavement field can be made lower than the case where straight asphalt is used. Therefore, the energy-saving nature which advanced hydrocracking process residue has is enjoyable also using a mixture 1.

[0028] On the other hand, in a field of 100 degrees C or less, the kinematic viscosity of a mixture 1 approaches the kinematic viscosity of straight asphalt gradually as it becomes low temperature. Therefore, since ambient air temperature is 100 degrees C or less when it becomes the component of a pavement side as plied timber blended once, the mixture 1 can maintain the hyperviscosity near straight asphalt, and can prevent what is called the development of a rutted road surface.

[0029] In 100 degrees C or less, the mechanism by which the kinematic viscosity of a mixture 1 approaches the kinematic viscosity of straight asphalt rapidly is considered as follows. If a mixture 1 is made into the elevated temperature of 200 degrees C or more, the asphaltene contained in straight asphalt will expand and the restraint of the micell of asphaltene will loosen. The amount of [ a part for the oil contained in this micell in Toyotomi at advanced hydrocracking process residue and / comparatively low-molecular ] resin permeates. If the asphaltene which received osmosis carries out temperature lowering, it will incorporate a part for a part for said oil, and low-molecular resin. However, since the perimeter is surrounded in oil, it cannot return to a micell. That is, it cannot return to asphaltene but distributes as a part for big resin. If temperature furthermore falls, the amount of big resin will become resin which is rich in plasticity, and the force of coagulation will be heightened. Thus, in a low temperature region of 100 degrees C or less, the kinematic viscosity of a mixture 1 rises rapidly along with temperature lowering.

[0030] As for the mixed ratio of straight asphalt, from a viewpoint of keeping kinematic viscosity high in a low temperature region, it is desirable as above that more than 15 weight parts are [ more than 5 weight parts ] more than 30 weight parts still more preferably desirably to an advanced hydrocracking process residue 100 weight part. On the other hand, if the mixed ratio of straight asphalt is raised too much, viscosity lifting of an elevated-temperature region will take place, and the energy-saving nature of advanced hydrocracking process residue original will be lost. As for the maximum of the mixed ratio of this viewpoint to straight asphalt, it is desirable that below 60 weight parts make [ below 90 weight parts / below 70 weight parts ] it still more desirable desirably to 100-fold advanced hydrocracking process residue Ryobe.

[0031] Next, the minimum temperature (temperature which turns into kinematic viscosity of about 250-320mm [s]<sup>2</sup>) which can be constructed, and the temperature (test result) which becomes meltable [ the polymer of a predetermined class ] are measured about advanced hydrocracking process residue, a mixture 1, and three persons of straight asphalt, and it is shown in Table 2. When individual polymer is supplied in the advanced hydrocracking process residue, the mixture 1, or straight asphalt heated with polymer meltable temperature here When polymer dissolves into advanced hydrocracking process residue, a mixture 1, or straight asphalt, the temperature a solid is no longer accepted to be is said.

[0032]

[Table 2]

	比較例1	比較例2	実施例1
組成	高度水素分解工程残 産 100%	ストレートアスファ ルト 100%	混合物1 (100:30)
施工可能最低温度 (℃)	160	210	163
ポリマー可溶温度 (℃)	180	220	183

[0033] As compared with the case where the conventional straight asphalt near the construction temperature of advanced hydrocracking process residue is used, large energy saving is possible for the minimum temperature of a mixture 1 which can be constructed so that clearly also from Table 2. Moreover, a temperature required when adjusting a water-permeable paving ingredient which dissolves polymer was also low, it ended, and it was checked that energy saving in this field can also be realized.

[0034] Table 3 indicates various resin of a mixture with solvent EKUSUTORAKUTO, and a soluble test result with rubber to be advanced hydrocracking process residue as compared with the advanced hydrocracking process residue simple substance and the straight asphalt simple substance. In the table, "the mixture 2" shows that to which "the mixture 3" carried out 100 weight part mixing of solvent EKUSUTORAKUTO for what carried out 5 weight part mixing of solvent EKUSUTORAKUTO to 100 copies of advanced hydrocracking process residue to 100 copies of advanced hydrocracking process residue, respectively. In the inside of front "PP", polypropylene and "PE" polyethylene and "PS" Moreover, polystyrene, Ethylene propylene rubber and "EPT" "EP" Ethylene propylene terpolymer rubber, Butadiene rubber and "SBR" show styrene butadiene rubber, "TPO" shows olefin system thermoplastic rubber, and, as for "NR", "TPS" shows styrene system thermoplastic rubber, respectively, as for natural rubber and "BR."

[0035]

[Table 3]

	比較例3	比較例4	実施例2 (混合物2)	実施例3 (混合物3)
混合比 (重量部)				
高度水素分解 工程残査	100	0	100	100
ストレート アスファルト	0	100	0	0
ソルベント エクストラクト	0	0	5	100
相 容 性 (%)	樹脂 (PP/PE/PS)	2%以下	不溶	5%以下
	ゴム (EP/EPDM/BR/SBR)	10%以下	5%以下	15%以下
	熱可塑性ゴム (TPD/TPS)	15%以下	5%以下	20%以下
	石油樹脂 (C5, C9)	20%以下	10%以下	50%以下
	混合可能温度 (°C)	180	230	160

[0036] When it compares with straight asphalt from the first, advanced hydrocracking process residue is excellent in the compatibility of various rubber and resin, so that clearly also from Table 3, but compatibility can be further raised by mixing solvent EKUSUTORAKUTO. Although to usually carry out at least 20 weight part mixing of these rubber and resin to asphalt as asphalt used for a water-permeable paving is needed Since compatibility becomes still better by mixing solvent EKUSUTORAKUTO to advanced hydrocracking process residue, the width of a choice of rubber and resin which should dissolve can be expanded. Thereby, abatement of a material cost can be aimed at. Moreover, since compatibility increases, mixed temperature can be made low, and it can also \*\* to energy saving. As an example of above-mentioned solvent EKUSUTORAKUTO, the "FUKKORUAROMAKKUSU series" (FUKKORU is a registered trademark) by FUJI KOSAN, LTD. is [ in / in the city ] available.

[0037] Drawing 2 makes the connection of the temperature of a mixture 3 and kinematic viscosity which mixed 100-fold solvent EKUSUTORAKUTO Ryobe to 100-fold advanced hydrocracking process residue Ryobe contrast with an advanced hydrocracking process residue simple substance and a solvent EKUSUTORAKUTO simple substance, and shows it. Generally, the kinematic viscosity of solvent EKUSUTORAKUTO is lower than the kinematic viscosity of advanced hydrocracking process residue, and if both are mixed as stated above, the kinematic viscosity of a mixture will become near the kinematic viscosity of solvent EKUSUTORAKUTO which is hypoviscosity. Therefore, in order to maintain the kinematic viscosity of a mixture beyond a predetermined value, as for the mixed ratio of solvent EKUSUTORAKUTO, it is desirable that below 2 weight parts generally make [ below 20 weight parts / below 10 weight parts ] it still more desirable desirably to an advanced hydrocracking process residue 100 weight part.

[0038] In addition, it changes into above-mentioned solvent EKUSUTORAKUTO, and the same effect is acquired even if it mixes a part for Taal produced from a cat cracker (FCC Taal), and the gas cut (VGO-VACUUMED GAS OIL) produced from

vacuum distillation equipment.

[0039] This invention may mix the straight asphalt or solvent EKUSUTORAKUTO of the specified quantity alone to advanced hydrocracking process residue, and may mix straight asphalt and solvent EKUSUTORAKUTO simultaneously. Furthermore, you may mix rubber and resin of the specified quantity to these for permeable grant. Moreover, in the above embodiment, although explained focusing on the object for route pavement, the application of the asphalt composition of this invention is not limited to this, and can be applied also to the applications "the object for water proof", "the object for seals", "the object for antirust paint", "the object for ink coating materials", "for sound insulating materials", etc. Furthermore, since the asphalt composition of this invention has the good compatibility of plastics, an inflammable contaminant (plastics contaminant) can be dissolved, and since it can be used for a roadbed, applying to refuse disposal is also possible.

[0040] Incidentally, the home demand of permeable asphalt has estimated it as the thing over 1 million t in 2005, and the treatment of a 200,000t plastics contaminant per year of it is attained by carrying out this invention.

[0041] In the invention in this application when mixing straight asphalt or solvent EKUSUTORAKUTO to advanced hydrocracking process residue It can blend to homogeneity by fully agitating within a tank the advanced hydrocracking process residue, the straight asphalt, or solvent EKUSUTORAKUTO maintained at the predetermined elevated temperature. Moreover, you may mix what is called with a line blend blended supplying the advanced hydrocracking process residue and straight asphalt which were warmed by predetermined temperature, or solvent EKUSUTORAKUTO to the same line.

[0042] As mentioned above, although this invention was explained in this time in relation to the embodiment considered to be desirable with it being practical This invention is not what is limited to the embodiment indicated in the application-concerned Description. He can change suitably in the range which is not contrary to the summary or thought of invention which can be read in a claim and the whole Description, and the asphalt composition and plied timber accompanied by such alteration must also be understood as what is included by the technical range of this invention.

[0043]

[Effect of the Invention] As explained above, [ one mode of this invention ] [ according to the asphalt composition which mixed the straight asphalt of 5 - 90 weight part to the advanced hydrocracking process residue 100 weight part ] The hot kinematic viscosity of the asphalt composition which mixed advanced hydrocracking process residue and straight asphalt in the mixing percentage of the predetermined range is close to the kinematic viscosity of advanced hydrocracking process residue, and if it becomes low temperature conversely, it will become rapidly close to the kinematic viscosity of straight asphalt. Therefore, since the hot kinematic viscosity of this mixture is low, Merritt so that energy saving at the time of using it with an advanced hydrocracking process residue simple substance is enjoyable. Moreover, since the kinematic viscosity of this mixture becomes high to near the kinematic viscosity of straight asphalt in near ordinary temperature, when advanced hydrogenation process residue is used alone, the problem of \*\*\*\*\* which poses a problem can be solved.

[0044] In this mode, if solvent EKUSUTORAKUTO of 2 - 20 weight part is mixed to said asphalt composition 100 weight part, the compatibility over rubber and resin of an asphalt composition can be raised.

[0045] Moreover, in this mode, you may mix petroleum resin of 3 - 30 weight part to said asphalt composition 100 weight part. In this mode, it is still better also as mixing the rubber of 3 - 30 weight part to said asphalt composition 100 weight part. It is good also as mixing the thermoplastic rubber of 3 - 30 weight part to said asphalt composition 100 weight part.



[0046] If it does in this way, an operation of rubber and resin can raise the voidage of the plied timber, and the asphalt composition which can be publicly used for a water-permeable paving can be offered.

[0047] According to the second asphalt composition which mixed solvent EKUSUTORAKUTO of 2 - 20 weight part to the advanced hydrocracking process residue 100 weight part, in other modes of this invention, the compatibility over rubber and resin of advanced hydrocracking process residue can be raised further. The class of the rubber which can be used by this, or resin will become abundant, and the degree of freedom of selection can be raised. Furthermore rubber and resin of low cost can be used now, and a cost cut can be aimed at.

[0048] In this mode, you may mix petroleum resin of 3 - 30 weight part to said second asphalt composition 100 weight part. Moreover, it is good also as mixing the rubber of 3 - 30 weight part to said second asphalt composition 100 weight part in this mode. Moreover, it is good also as mixing the thermoplastic rubber of 3 - 30 weight part to said second asphalt composition 100 weight part in this mode.

[0049] If it does in this way, the spreading nature on the surface of aggregate can become good by operation of rubber and resin, the voidage of the plied timber can be raised, and the asphalt composition which can be used conveniently for a water-permeable paving can be offered.

[0050] That with which petroleum resin, rubber, or thermoplastic rubber was furthermore mixed among the asphalt compositions of many above-mentioned modes can be used for permeable route pavement, and the above-mentioned asphalt composition can be applied suitably for pavement of a permeable route.

[0051] if it is alike and is based on the plied timber with which the asphalt composition of many above-mentioned modes was mixed, the asphalt composition equipped with many above-mentioned characteristics is applicable to the plied timber for route pavement.

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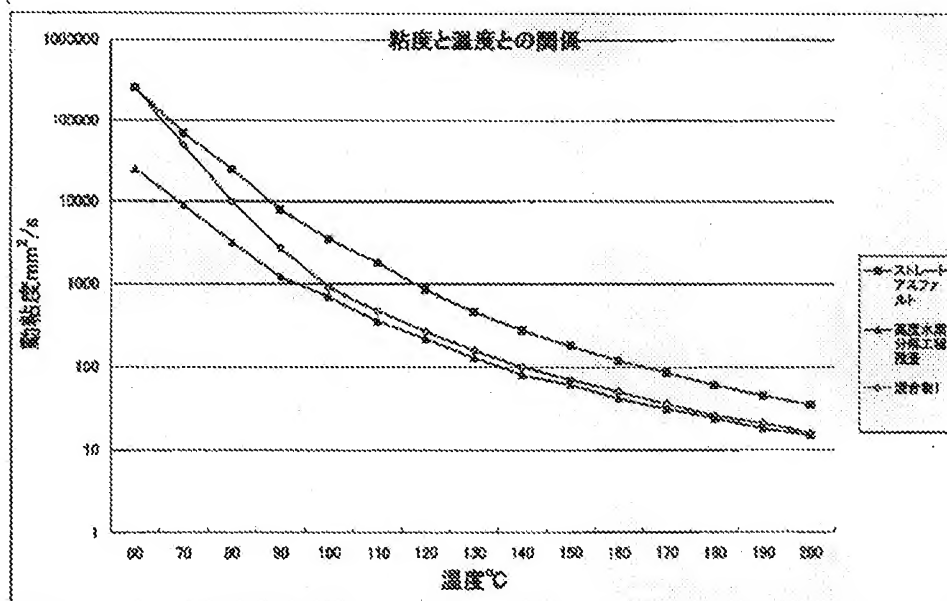
[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the connection between advanced hydrocracking process residue, the kinematic viscosity of a mixture with straight asphalt, and temperature.

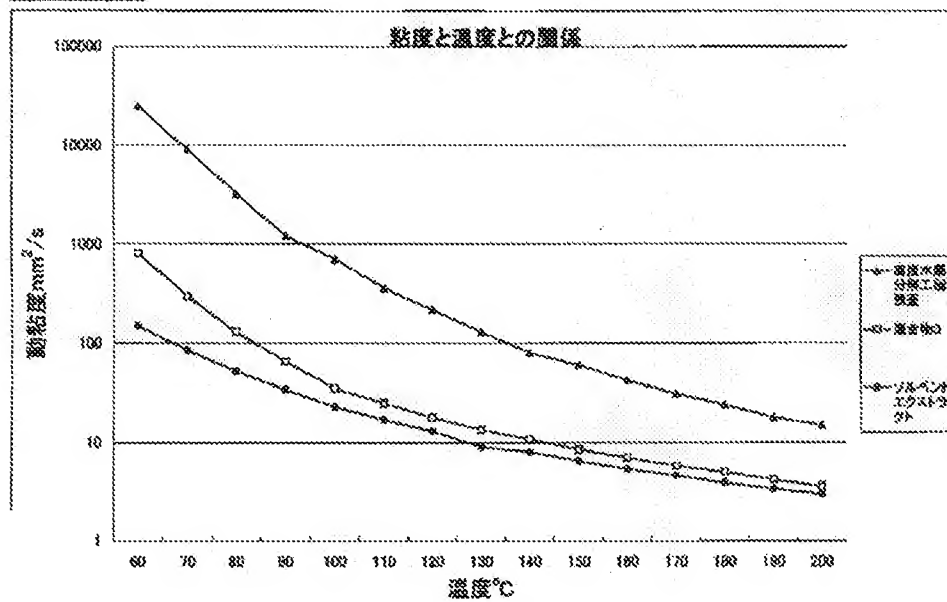
[Drawing 2] It is drawing showing the connection between advanced hydrocracking process residue, the kinematic viscosity of a mixture with solvent EKUSUTORAKUTO, and temperature.

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[Drawing 1]



[Drawing 2]



[Translation done.]

Report Mistranslation

Japanese (whole document in PDF)